DOCUMENT RESUME

ED 162 623 IR 006 267

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TITLE An Information System for Career Counseling and Guidance in the Health Fields: Some Considerations for Planning.
PUB DATE Mar 78
NOTE 12p.; Paper presented at the Annual Meeting of the Association for the Development of Computer Based Instructional Systems (Dallas, Texas, March 1-4, 1978); For related document, see IR 006 231

EDRS PRICE MF-$0.83 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Bibliographies; *Career Planning; *Computer Oriented Programs; *Guidance; *Health Occupations; Information Dissemination; *Information Systems; Systems Development; *Vocational Counseling

ABSTRACT

Career information needs to be systematized for individual understanding and use, structured at a rate and depth harmonious with the individual's development, and presented or displayed in a manner facilitating selection of pertinent information. This report presents some of the more salient characteristics of an information system which would facilitate appropriate decision-making by supporting, or intervening with, a valid career counseling process. It is suggested that the five principal components of the content of the total system should be: (1) possible career directions (plus typical qualifications and training, physical requirements, temperament), (2) training facilities available (plus entry requirements and average costs), (3) funds or other assistance for study, (4) manpower predictions shaped in terms of average preparation time-frame, and (5) comprehensive counseling. (Author/VT)

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ED162623

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AN INFORMATION SYSTEM FOR CAREER COUNSELING AND GUIDANCE IN THE HEALTH FIELDS: SOME CONSIDERATIONS FOR PLANNING

BY

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AN INFORMATION SYSTEM FOR CAREER COUNSELING AND GUIDANCE IN THE HEALTH FIELDS: SOME CONSIDERATIONS FOR PLANNING

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Introduction

Health care is a profession encompassing a variety of personnel. The National Library of Medicine classifies the following broad areas of programs: medicine, dentistry, allied health sciences, osteopathy, optometry, and podiatry. The formal preparation time ranges from one year general programs to subspecialty requirements spanning many long years. Other areas under the very broad classification of administration or management support are almost too numerous to list. These range from housekeeping to sophisticated computer science and electronics, nuclear engineering, with complicated diagnosis and care management techniques growing by leaps and bounds. A whole new business science is developing around such areas as the coding of insurance claims for faster turn-around time or disbursement, Medicare and Medicaid profile structuring of average charges, and encoding cancer diagnoses and treatment the entire life of each patient for satistical research.

With the propigation of HMO's (Health Management Organizations) and the advent of some form of National Health Insurance, the health care industry is concerned with management through good health as well as care for those in the opposite condition. Young people, especially those entering a health field program for the first time, must make career decisions and plan viable alternatives of a flexible nature. This report will present some of the more sallient characteristics of an information system which would facilitate appropriate decision-making by supporting, or intervening with, a valid career counseling process. Primary concern will be with those entering the system the first time, although some thought will be presented in support of those wishing to replan or construct alternative career directions, as well as about career mobility, i.e., growth in the field.

I. Decision-Making

A career is like motion and is viewed as being the "time-extended working out of self" by Ellis and Tiedeman (11, p. 354). A career is not just a person's job, but is the context for "the expression of hope and desire and limitation upon life" (11, p. 354). Most often there is a problem or some difficulty with deciding as the result of freedom of choice in the act of inscribing one's career road map.

"The relationship between an individual and his occupation is, in many ways, similar to the relationship between an individual and his marriage partner. Both partners contribute to meeting the needs of each other; both impose demands upon the other" (12, p. 117). This places the focus by counseling and information systems supporting those endeavors squarely upon the individual.

In order to help each client deliberate about who he is and what he wants to become, Healy (8, p. 67f) listed eight replicable career counseling procedures: systematic planning, interpretation of empirical data, reinforcement, self-acceptance, specificity of problems and goals, on-going evaluation of process, transferability of acquired (problem solving) skills, and peer modeling. The one principal limitation to this individually-oriented format is direct input by others involved in the client's career, such as family.

A part of the career planning process, and placing more demand upon a comprehensive information system, is the aspect of career mobility. The development of viable alternatives does not always imply initial entry redirection. A plan of growth may entail sequencing or phasing of progress as the result of such factors as available funds, family status, or proximity of study facilities which may, themselves be in phases. Many institutions now make career step ladders available, and entrants to health careers should have access to related information as a function of long-range planning.

II. Information Systems

Career information needs to be systemized for individual understanding and use, structured at a rate and depth harmonious with the individual's development, and presented or displayed in a manner facilitating selection of pertinent information to enable internalizing by the individual. What should result is integration--the individual interweaving attitudes about himself and the external career information.

The format of an information system applicable to the cause herein discussed may take the shape of a classified library or move along a continuum of formats to any property that is useful in the creation of useful sets for the ultimate benefit of the search process. In this case, the logistics of the information structure become just as important as the content of the component items. A heuristic search may manage with items representation that is less intensively "descriptive" than in a batch search system. This is because the enquirer is not "at arms length" from real text and may, therefore, be tentative in his request for information. Barker et al. (Journal of Documentation 28:1 3/72 44-55) find that recall rises, at the expense of precision, with an increase in searchable text. A search of titles plus keywords, or titles plus digest, retrieves more relevant material than a search of titles only. The authors maintain that this technique could be refined to enable a user to specify a

required level of performance--very beneficial to career information searching. The burden of abstracting may be reduced by utilization of "terse conclusions" which further aid the searcher.

Ideally, this hypothetical information system would interface with almost any cost-effective form of media. The all-too-familiar shelves displaying colored brochures can be insufficient for incentive building. Multi-media have found their way into the classroom, and surely have proven their value in concept building, transference, instant time-compressing, etc. From computer controlled audiovisual devices to printed materials, with live presentations for individuals or groups, the most appropriate form of communications should be used. Individual carrels with dial access to video or audio libraries with accompanying software could enable the user to explore a wide range of possible interests. Compressed speech with a slide display facilitates "stop and go" searching. With a short film or video tape, a "case history" presentation can induce realism about any specific career area including personality (temperment) and other profiles of a typical professional. Computer terminals can perform interest surveys and other tests, with hard copy available if desired.

The final decision as to materials format, location, size of collection and budget allocation should be made with the concept that accessibility is a detriminant of extent of use, which is in turn related to skills, intellectual level and maturity of potential users (10, pp. 127f & 14). "For materials to be considered to be accessible by the user, identifying, locating, retrieving, record keeping, and returning will all need to be accomplished in a minimum of time" (10, p. 128).

Housing for the multimedia resource center is considered to be a function of numbers of users. This can be a section of a regular library or separate facilities located in close promimity to the guidance offices. There should be ample room for both individual as well as small group utilization, along with storage facilities, resource center offices, maintenance area, etc. Security is a matter for concern, but ensuring that users will be able to locate materials is more important. Personnel available for assistance should be well-trained and unbiased. Rather than the physical connotations of housing, the concern is for the environment being psychologically strong and the information system comprehensive, available in many media, and highly accessible to potential users.

III. Career Counseling Criteria

Most direct benefits derived from career counseling can be classified as information processing, planning, and execution (8, p. 76f). Contacts with and knowledge of informational resources (as discussed above) equal awareness. Attitudes about obtaining information, realism of self-concept and self-esteem all effect judgment in determining exactly what it is a person wants to be.

Planning factors such as acceptance of responsibility, realism of plans and ability to solve career problems all affect the feasibility of a complete career plan containing strategies and objectives. Certainly the satisfaction from proper execution factors will be a direct result of the seed planted in the beginning by the career information system.

IV. ISVD (Information System for Vocational Decisions)

The United States Office of Education granted funds to Harvard University for the only project in history of the use of computers at that time to go so far in relating guidance functions to advanced notions relating to information processing, data storage and retrieval, and natural language processing, etc. (6, p. 122f). With the computer we have the potential to make guidance less hurried, less directive, and even less factual. Instead of "legitimizing" outmoded practices such as paper shuffling through automation, the approach was to look beyond guidance practice to guidance theory; specifically a theory of career development.

A career is not just a job or past and present related activities. It is a purpose imposed upon those activities and of a time-extended nature. The decision-making process, central to a career, is divided into anticipation and accommodation. In Ellis' summation of Tiedeman's paradigm (6, p. 127) he states: "The anticipation aspect consists essentially of a person's preoccupation with the pieces--facts, alternatives, options, consequences--out of which a decision is to be fashioned and with the aspirations, hopes, expectations, constraints, and the like which will determine the form of the decision." About the accommodation aspect, he says: "The aspect of implementation or adjustment--represents the movement from anticipation to induction; it is the point where imagination meets reality."

Very important to the basic concepts of an information system are the "subaspects" or stages of anticipation. Exploration begins with awareness that a problem exists and a decision must be made about a number of different alternatives or possible goals. Crystallization represents a stabilization, or ordering of all relevant considerations such as the potential return for each goal. Choice is elected with varying degrees of certainty affected by clarity, complexity, and freedom available (directly related to the information system). Clarification is the final stage of anticipation, and is a necessary projection of self into the image of the future in order to dissipate doubts about the decision.

This model of a decision-making process, and the posited relationship between it and career development are primarily "to get the individual to take title to his career" (6, p. 129). In order to encourage a sense of responsibility, ISVD proposed to place students among resources and enhance their access to them, i.e., an environment called an information system. The search time must

not hamper decision-making, therefore the computer is expected to store large amounts of data and make them immediately and selectively available as the individual proceeds through the decision-making process. As stated previously, the structure must facilitate creating order as the searcher browses. Probing, suggesting; enabling the following of leads in the manner of a simulator or game player, the system becomes a mediator to connect the counselor to the student. ISVD was not a project about computers.

Planning the educational orbit involves both academic and clinical institutions. In fact, many employers provide more than clinical training sites; formal and informal programs are initiated as part of the education process. Herein lies a problem--recognition of these institutions as part of an academic tract, or educational orbit. All educational institutions must provide inter-system coordination for the sake of organized, reliable, and shared information. (Already, Texas networks exist for the purpose of sharing library and learning resources.)

For the study of degree and non-degree programs, resources (institutions and the programs they foster) should be shared. Clusters of related careers in a core curriculum should give advantages to students and the institutions. In the process of centralizing faculty, better definition of career directions would be possible with the student in mind, as opposed to adherence to a particular school with choices limited as a function of existing "in-house" programs. This could also feed back into the shared information system in the form of a higher degree of specificity of career information.

Manpower projections of the supply of and demand for a number of emerging and radically changing occupations are severely limited by the storage of data on their functions, roles, or acceptance. Educational planning by institutions must be based on realistic representations of these projections. The information system, at a minimum, should be able to furnish valid projections of not only positions and numbers, but location as well. Immediately or sequentially adjacent should be salary ranges, training requirements and cost ranges for that training. A very realistic need is for information concerning available financial aids for undergraduate studies (17). Some authorities believe that the proper goal for manpower planning should be the overloading of the market in order to give the health care industry a better choice in personnel, as opposed to the current condition.

V. Study of Health Manpower by the Connecticut Institute for Health

Of the many different sources queried the largest return percentage was from employers and health education institutions (5). The state medical and dental societies were not included as the result of time deficiencies and non-acceptance of the data gathering instruments. However, other organizations and societies did participate. In general, the capacity of existing educational

programs was deemed sufficient, as was the number of students enrolled. Continuance of on-the-job training by hospitals for low level of specialty positions remains a problem as related to lack of transferability to other institutions. The basic concept of a career ladder is being introduced, however.

One recommendation by the state commission was the establishment of some vehicle for coordinating the activities of educational and clinical institutions. (Even disagreement on job titles vs. curriculum labels causes confusion, results in over-training, say the employers (5, p. B-19).) Not the least of the supportive activities suggested is development of an on-going health information system (5, p. B-23). This was called "an information-system/job bank." The commission extended special emphasis by stating that $80,000.00 was already available from license and certification fees, plus the fact that The National Center for Health Statistics is developing such a system. Included in this data bank the committee wishes to have training opportunities and the costs involved. These are highly essential for educational resource regional long-range planners to see that both types and numbers of properly trained personnel are ready when and where needed.

VI. Predictions: Trends in Health Occupations and Implications in the Delivery System

In each decade since 1940, employment in health rose 50%, reaching 5 million today. By 1980 we are projected to need 7 million (7). In spite of slow-downs, we are not short of money, and where there is money to pay, services will be provided. Even a shortage of highly skilled personnel is met by furnishing more narrowly trained personnel, but in greater numbers.

Growth in the health care industry is the result of these three factors (7, p. 2):

(1) Hope: technical and scientific advances enable people to get a great deal out of the health industry.
(2) Affluence: a national health insurance will eventually come, making the manpower boom created by Medicare minor by comparison.
(3) Super-annuation: due to a decrease in birthrate, we are becomming an aging nation, plus having older people a longer time. Older people, like old machinery, require a lot of care to keep them functioning.

Frey goes on to say: "With these factors of population, increased useage, dollars and aging continuing, we will have continued need for expanded education of both conventional and new types of health personnel, regardless of the system" (7, p. 2).

There is a shift of emphasis, with the accent on ambulatory care, for rehabilitation kinds of workers with a decrease in acute care kinds of people.

Management of people, diagnosis systems which are computer based, primary care workers backed up by sophisticated communications equipment, and environmental workers will increase. (Be sure your information system has a good handle on this latter one--needed but Washington does not know where or when.)

As the result of scientific and technical innovations, a large number of new career slots will appear. More automation of the laboratory; new sallies in radiologic technology (radiant energy, ultra-sonics, thermography, nuclear medicine, etc.) plus computer-assisted diagnosis. (Right now in San Antonio is a relatively new industry called Avionics. Heart patients walk the streets with a small, expensive tape recorder connected for vital signs and constant recording of EKG. In the event of trauma, these recordings are fed into a computer in Indiana which has its data base and program up-dated every four hours. Capital outlay by the physicians founding such an enterprise: a little less than a half million dollars. Yet, the profit first year-end will be of interesting size.)

Changes in the delivery system are evident in the increase in HMO's. Emphasis will be on the profit side, i.e., keeping people well and out of the acute care side. Manpower implications are many: just a few are dieticians, diagnosis workers, medical records clerks (many), and health sociologists (can relate to an enormous system and manage people through it).

New emphasis on quality control will immediately require education to individualize instruction as the result of the system being evaluated and not the people. Relevancy of education outside the industry to the needs of the job will greatly increase. The demands upon the information system/counseling process will be amplified. ". . . to change our ways in health care delivery, preparation to work in delivery has to change as well" (7, p. 11).

VII. Opportunities for Empirical Research

There well may be opportunities for development of a strong rationale for the existence of an information system/resource center as it relates to research on the entire health career counseling process. The following list is intended as only a small sample of potential research areas:

A. Incentives and attitudes as affected by the multimedia resource system. (Psychology, physics, communications)
B. Human information-processing (visual, audio literacy): (virtually the entire campus from Engineering to Communications to Instructional Media).
C. Evaluation, accountability of career guidance system: (Educational Psychology, Statistics--even the School of Business).
D. Structure, impact of Multimedia Resource Center: (Instructional Media, Library Science, Educational Psychology, Architecture, etc.).

E. Library Science approaches to indexing, abstracts, descriptors, etc.:
(Library Science and Information Science would both embrace Computer Science for this one).
(Perhaps even the Department of Transportation would need to do a traffic management study.)

VIII. Summary

The inherent value in the information system will be ascertained via a feedback system. The principal question to be answered is: will a surface level penetration into a field (or inquiry to what-ever depth) enable the user to make valid career choice decisions? Appropriate to this question is a point of difference between data (facts) and information (facts interpreted in relation to use) (11, p. 359) with the particular challenge to structure the Resource Center and its content to best aid the user.

The five principal components of the content of the total system should be:

(1) Possible career directions (plus typical qualifications and training, physical requirements, temperment).
(2) Training facilities available (plus entry requirements and average costs).
(3) Funds or other assistance for study.
(4) Manpower predictions shaped in terms of average preparation time-frame.
(5) Comprehensive counseling.

Compiling data, deriving information sources, up-dating, and structuring materials for optimum display will be a demanding task. Studies by states such as Connecticut (5) call for information systems and the health manpower planning required by institutions to be coordinated on a national basis.

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